INDICATOR OF REMAINING ENERGY IN STORAGE CELL OF IMPLANTABLE MEDICAL DEVICE

ABSTRACT

A manganese dioxide (MnO2) or silver vanadium oxide (SVO) or other battery of an implantable medical device having a relatively flat quiescent battery voltage during a beginning portion of the battery's useful life, makes it difficult to use quiescent battery voltage as an indicator of remaining battery energy during this portion of the battery life. A substantially constant load current pulse is drawn from the battery and a pair of loaded battery terminal voltage measurements is taken during this pulse. A difference between the voltage measurements is computed. This difference can be expressed as a rate of change, a slope, or a polarization angle, and can be used with stored data from similar batteries to determine remaining energy of the battery. A quiescent battery voltage can also be used in combination with this technique, and/or for distinguishing between different remaining energies corresponding to the same difference, slope, or polarization angle.